IN THE CLAIMS:

Please add new claims:

62. A device for synthesizing a multimer or a plurality of multimers comprising:

a chemical reactor comprising one or more isolated reaction sites; and

an optical system operably linked to the chemical reactor, which optical system selectively irradiates one or more reaction sites.

63. The device of claim 62 further comprising a reagent manifold operably linked to the chemical reactor.

64. The device of claim 62 further comprising a controller for controlling the optical system.

65. The device of claim 64 wherein the controller is a computer.

66. A device for synthesizing a multimer or a plurality of multimers comprising:

a chemical reactor comprising one or more isolated sites;

a reagent manifold operably linked to the chemical reactor;

an optical system operably linked to the chemical reactor, which optical system selectively irradiates one or more reaction sites; and

a controller operably linked to the optical system for controlling the selective irradiation of reaction sites.

67. The device of claim 66 wherein the optical system comprises a light source, filter system, lenses, spatial optical modulator, and reflectors.

68. The device of claim 67 wherein the light source is selected from the group consisting of mercury lamp, a xenon lamp, a halogen lamp, a laser, and a light emitting diode.

69. The device of claim 67 wherein the spatial optical modulator is selected from the group consisting of digital micromirror devoce, reflective liquid crystal display device, and transmissive liquid crystal device.

70. A method for synthesizing one or more selected multimers on a substrate comprising one or more initiating moieties, the method comprising:

adding one or more photogenerated acid precursors to the substrate;

irradiating the substrate to generate a photogenerated acid from the prescursors which acid deblocks the initiating moieties;

coupling one or more monomers to the deblocked initiating moiety; and

repeating steps (a) – (c) until the selected multimers have been synthesized.

71. The method of claim 70 wherein the selected multimers are DNA.

72. The method of claim 70 wherein the selected multimers are RNA.

73. The method of claim 70 wherein the selected multimers are DNA/RNA hybrids.

74. The method of claim 70 wherein the selected multimers are peptides.

75. The method of claim 70 wherein the selected multimers are carbohydrates.

76. The method of claim 70 wherein the photogenerated acids are selected from the group consisting of photogenerated acid of Table 1a.

77. A method for synthesizing an array of selected oligonucleotides on a substrate comprising isolated reaction sites containing initiating moieties, the method comprising:

adding one or more photogenerated precursors to the substrate;

differentially irradiating isolated reaction sites to generate a photogenerated acid from the precursors, which acid deblocks the initiating moieties in the irradiatedisolated reaction sites;

coupling one or more monomers to the deblocked initiating moieties; and

repeating steps (a) – (c) until the array of selected oligonucleotides has been synthesized.

78. A method for synthesizing an array of selected multimers on a substrate comprising isolated surface sites containing initiating moieties, the method comprising:

adding one or more photogenerated reagent precursors to the substrate;

differentially irradiating isolated reaction sites to generate a photogenerated reagent from the precursors, which reagent activates the initiating moieties in the irradiated isolated reaction sites;

coupling one or more monomers to the activated initiating moieties; and

repeating steps (a) – (c) until the array of selected multimers has been synthesized.

79. A method for simultaneously modulating chemical conditions at an array of isolated reaction sites on a substrate, the method comprising:

adding one or more photogenerated reagent precursors to the substrate; and

differentially irradiating isolated reaction sites to differentially generate predetermined amounts of photgenerated reagents from the precursors, which affect chemical conditions in the irradiated isolated reaction sites.

REMARKS

The claims of this Amendment find support in the application of Garner as filed, specifically, claims 1-38 of the Co-Pending Patent Application, filed June 4, 1999, Serial No. 09/326,526 (the '526 Application), claims 1-18 of Provisional Patent Application, filed June 4, 1998, Serial No. 60/087,948 and claims 39-61 of the present Application as submitted by the Preliminary Amendment, filed February 2, 2001. Further support for the claims of this Amendment may be found in the present Application, at page 6, lines l 22 and Figure 3, in which